R E M A R K S

In the Office Action, claims 30 and 33 were said to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims as mentioned in point 10 of the Office Action. Claim 43 was said to be allowable if rewritten into independent form including all of the limitations of the base claim and any intervening claims and upon meeting 112 matter as stated in point 11 of the Office Action.

The drawings were objected to for the reasons stated in point 1 of the Office Action. The disclosure was objected to on the informalities mentioned in point 2 of the Office Action. Claims 29, 37-40 were rejected under 35 USC 112, first paragraph, for the reasons stated in point 3 of the Office Action. Claims 31 and 43 were rejected under 35 USC 112, second paragraph, for the reasons stated in point 4 of the Office Action.

Claims 22, 23, 27, and 28 were rejected under 35 USC 103(a) as unpatentable on Applicant's admitted art in view of Blaettner et al as set forth in point 5 of the Office Action. Claims 24-26 were rejected under 35 USC 103(a) as unpatentable over applicant's admitted prior art in view of Blaettner et al and further in view of Siemens (8624050) for the reasons stated in point 6 of the Office Action. Claims 29, 31-32, 34, 37, 41 and 42 were rejected under 35 USC 103(a) as unpatentable over applicant's admitted prior art in view of Blaettner et al and further in view of Eheim (22 64 934) on the grounds set forth in point 7 of the Office Action. Claims 35, 36, 39 and 40 were rejected under 35 USC 103(a) as unpatentable over applicant's

admitted prior art in view of Blaettner et al and further in view of Ikegami et al for the reasons stated in point 8 of the Office Action. Claim 38 was rejected under 35 USC 103(a) as unpatentable over applicant's admitted prior art in view of Blaettner et al and further in view of Ikegami et al on the grounds set forth in point 9 of the Office Action.

A Request for Drawing Correction Approval is presented to include correction of Fig. 3 (as shown in red ink) and presentation of a new Fig. 5 (in black), for the approval of the Examiner.

Presented herewith, subject to approval by the Examiner, is a new Fig. 5 showing the feature of the two crossing coils. There is added no new matter because the parts 12, 13 are disclosed in the specification and drawing as upper and lower winding body parts (page 5, lines 10-11). On page 3 lines 24 ff it is described that the stator is designed as a winding body with coils which are fit on it so that there is no added new matter.

Fig. 5 shows coils 21, 22 which are wound on the winding body consisting of the winding body lower part 13 and winding body upper part 12. Furthermore, the coils 21, 22 cross each other. This feature is described a page 3 lines 29 ff.

Fig. 3 has been amended to identify the stop by reference numeral 20 and to insert the reference numeral 4 to identify the rotor. Therefore the figures show all the features of the rotor 4 including a permanent magnet 5 and a rotor shaft 7. The rotor shaft 7 is mounted radially in bearing regions 10, 11 (Fig. 3,

and specification page 5 lines 7 ff) and axially by one or two thrust rings 1a, 1b in cooperation with parts 6a, 8a.

The correction to Fig. 3 and a corresponding correction to the specification on page 6 at lines 20, 21 and 24 distinguish between the gap 19 and the stop 20.

Reference sign 14 (questioned by the Examiner in Point 1 of the Office Action) is shown on page 5 at line 14 for "recess 14".

The specification has been amended to conform to the drawing changes, and to meet the first two statements in Point 2 of the Office Action. In the rewriting of the paragraph on page 5, beginning at line 24, text at lines 25 and 26 has been deleted for clarity since this material appears previously at lines 13 and 14.

The matter raised in Points 1 and 2 of the Office Action with respect to claim 23 is traversed respectfully. The claim is correct in stating the first ring or the second ring. Please note the teachings of the present specification on page 1 at lines 35-39 and page 5 at line 12, wherein the rotor presses against one thrust ring or the other trust ring because of the floating mounting provided by the gap between elements 3a and 6a of Fig. 4. The rotor does not press against both rings simultaneously as in Blaettner et al.

Claim 22 has been amended to define over the teachings of the cited art by reciting the feature of the floating mounting of the rotor. The claims depending from claim 22 are believed to be

allowable in view of the "floating" feature plus the additional limitations provided by the respective dependent claims.

Claim 23 has been rewritten in independent form and is believed to be allowable because the rotor is axially movable. So depending on the position of the rotor, i. e. whether the rotor shaft is in a horizontal position as in Figs. 3 and 4 or in a vertical position as in Fig. 2, the rotor (4) loads either the first or second thrust ring continuously (when the rotor shaft is in a vertical position) or the thrust rings are loaded alternately, when the rotor is in a horizontal position and the rotor shaft can move axially until parts 3a and 6a or 3b and 8a touch each other. In the example in the present specification and drawings of the use of the motor for driving a fan connected to the rotor shaft, clockwise rotation introduces an axial force in a direction opposite to a counterclockwise rotation of the fan. This urges the rotor against one or the other of the thrust rings.

Claim 23 is not obvious in consideration of the prior art since in Blaettner et al the rotor is not able to move in an axial direction since parts 160, 164 press on both sides of the rotor against parts 228 (Fig. 2A) so that independently of the position of this motor both thrust rings are loaded at the same time. However, in the invention of present claim 23 only one side is loaded at a time.

Referring to the rejection of claims 24, 25 and 26, no micro fibers are shown in any cited prior art so one cannot imagine how

a person skilled in the art would have come to this solution by combining the cited prior art.

Referring to the rejection of claim 29, none of the cited references describes a recess in the stator for an axially arranged thrust ring. The recess of Eheim is for creating a radial bearing, not for an axial bearing. All axial bearings shown in the prior art do not show an arrangement in a recess, so the person skilled in the art has no reason to provide such a solution.

Claim 32 is amended to recite "by absorbing the pressing on forces by the axial stop (20)" to distinguish over Eheim.

Ikegami et al disclose motor coils wound around supports 108 (col. 3 line 66 f.). These supports 108 are arranged in a circumference of the opening of the stator 107, 200 (Figs. 3, 4). So these coils are wound inside the stator and do not cross each other.

So claim 38 should be allowable.

Claim 39 has been made dependent on claim 38. When coils cross each other there has to be an angle of orientation of one coil to the other coil. So amended claim 39 claims that the currents for supplying these coils have a phase separation which corresponds to that angle. This is described on page 3, lines 33-36.

Referring to claims 41 and 42 no cited prior art shows an fan impeller.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached pages are captioned "Version with markings to show changes made".

In the event there are further issues remaining the Examiner is respectfully requested to telephone attorney to reach agreement to expedite issuance of this application.

Since the present claims set forth the present invention patentably and distinctly, and are not taught by the cited art either taken alone or in combination, this amendment is believed to place this case in condition for allowance and the Examiner is respectfully requested to reconsider the matter, enter this amendment, and to allow all of the claims in this case.

Respectfully submitted,

Klaus Kronenberg, et al

by: _____
MARTIN A. FARBER
Attorney for Applicants
Registered Representative
Registration No.: 22,345

CERTIFICATE OF MAILING UNDER 37 CFR SECTION 1.8(a)

I hereby certify that the accompanying Amendment and Request for Drawing Correction Approval are being deposited with the United States Postal Service as first class mail in an envelope addressed to: Hon. Commissioner of Patents and Trademarks, Washington, D.C. 20231, on October 8, 2002.

Dated: October 8, 2002

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MARTIN A. FARBER

866 United Nations Plaza
Suite 473
New York, NY 10017
(212) 758-2878

Klaus Kronenberg, et al
Serial No.: 09/873,115
Filed: May 31, 2001
ELECTRIC MOTOR, IN PARTICULAR A FAN MOTOR
Examiner: Hanh Nguyen
Group art unit: 2834

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

Page 1, please replace the paragraph beginning at line 10 with the following rewritten paragraph:

The invention relates to an electric motor having a stator and a rotor, with the rotor having at least one permanent magnet and a rotor shaft [and] being mounted radially and axially, and with the stator having at least two coils which produce a rotating magnetic field, by means of which the rotor can be driven, when alternating currents flow through them, in particular for use as a blower fan.

Page 3, please replace the paragraph beginning at line 33 with the following rewritten paragraph:

If there is a phase separation between the alternating currents in the individual coils which corresponds to the angle of orientation of the individual coils to one another, the motor efficiency is high.

Page 4, Line 23, after this line insert the following paragraph:

Figure 5 shows schematically part of a stator winding disposed in a plane parallel to the plane of the figure, and part of a stator winding disposed in a plane perpendicular to the plane of the figure.

Page 5, please replace the paragraph beginning at line 7 with the following rewritten paragraph:

In Figure 3, the rotor 4 from Figure 2 is provided with a fan impeller 9 and is mounted radially in bearing regions 10, 11 of a stator which is designed as a winding body and comprises a winding body upper part 12 with a coil 22 (shown in Fig. 5) and a winding body lower part 13 with a coil 21 (shown in Fig. 5). Axially, the rotor 4 is mounted in a floating manner via two thrust rings [1a, 1b,] 1b and 1a, respectively, in the indentation 8 in the rotor 4 and in a recess 14 in the winding body lower part 13. The coil 21 crosses the coil 22.

Page 5, please replace the paragraph beginning at line 24 with the following rewritten paragraph:

The thrust rings 1a, 1b are arranged in the recess 14 and in the indentation 8 [in the rotor 4 and in the recess 14 in the winding body lower part 13] such that the sides with the microfibers 3a, 3b face the thrust surfaces 6a, 8a formed on the magnet mounting 6 on the rotor 4. The relative movement takes place between the respective fiber side 3a, 3b of the thrust ring 1a, 1b and the rotor 4 with the thrust surfaces 6a, 6b. The thrust rings 1a, 1b

are fixed with respect to the stator, which is in the form of the winding bodies 12, 13, when under load. This is achieved by the coefficient of friction between the rubber-like plastic matrix 2 and the stator being higher than that between the microfibers 3 and the rotor 4.

Page 6, please replace the paragraph beginning at line 16 with the following rewritten paragraph:

In order to fit the fan impeller 9 or other functional elements onto the rotor shaft 7 a very high axial force must be applied, once, to the rotor. During this procedure, the thrust ring 1a is compressed until the shaft abuts against a stop [19] 20 which is in the form of a metal ball. Provided it is sufficiently stiff, stop [19] 20 may also be formed from the plastic of the stator, which is in the form of the winding bodies 12, 13. The pressing-on forces are now absorbed by the stop [19] 20, and not by the thrust ring 1a and the magnet mounting 6.

IN THE CLAIMS

Please amend claims 22, 23, 29, 30, 31, 32, 33, 39, and 43, as follows.

22. (amended) An electric motor having a stator and a rotor, with the rotor having at least one permanent magnet and one rotor shaft and with the stator having at least

two coils which produce a rotating magnetic field when alternating currents flow through said two coils, by which the rotor is drivable, and the rotor shaft is mounted radially and axially, wherein the rotor (4) is mounted by [at least one] a first elastic thrust ring and a second elastic thrust ring (1a, 1b), with [a] the first thrust ring (1a) being arranged axially on [one] a first side of the rotor (4) and the second thrust ring (16) being arranged axially on a second side of the rotor to mount the rotor axially in a floating manner.

23. (amended) [The electric motor as claimed in claim 22] An electric motor having a stator and a rotor, with the rotor having at least one permanent magnet and one rotor shaft and with the stator having at least two coils which produce a rotating magnetic field when alternating currents flow through said two coils, by which the rotor is drivable, and the rotor shaft is mounted radially and axially, wherein the rotor (4) is mounted by a first thrust ring (1a) arranged axially on one side of the rotor (4), wherein a second thrust ring (1b) is arranged on another side of the rotor (4), and, depending on position of said rotor, the rotor (4) either loads the first or second elastic thrust ring (1a, 1b) continuously, or loads the first and second thrust ring (1a, 1b) alternately.

29. (amended) The electric motor as claimed in claim 22, wherein at least the first thrust ring (1a) is arranged in a recess (14) in the stator[, wherein the recess (14) accommodates a bearing disk (1a)].

30. (amended) [The electric motor as claimed in claim 22] An electric motor having a stator and a rotor, with the rotor having at least one permanent magnet and one rotor shaft and with the stator having at least two coils which produce a rotating magnetic field when alternating currents flow through said two coils, by which the rotor is drivable, and the rotor shaft is mounted radially and axially, wherein the rotor (4) is mounted by at least one elastic thrust ring (1a, 1b), with a first thrust ring (1a) being arranged axially on one side of the rotor (4), wherein the rotor (4) has at least one indentation (8) to accommodate a second thrust ring (1b).

31. (amended) The electric motor as claimed in claim 29, wherein the recess[es] (14) and an indentation[s] (8) in the stator and in the rotor (4), respectively, are in a form of truncated cones.

32. (amended) The electric motor as claimed in claim 22, wherein the stator (12, 13) has an axial stop (20), and wherein by said axial stop an axial movement of the rotor shaft (7) is limitable by said axial stop by absorbing the pressing on forces by the axial stop (20) when additional components are mounted on the rotor shaft (7).

33. (amended) [The electric motor as claimed in claim 22] An electric motor having a stator and a rotor, with the rotor having at least one permanent magnet and one rotor shaft and with the stator having at least two coils which produce a rotating magnetic field when alternating currents flow through said two coils, by which the rotor is drivable, and the rotor shaft is mounted radially and axially, wherein the rotor (4) is mounted by at least one elastic thrust ring (1a, 1b), with a first thrust ring (1a) being arranged axially on one side of the rotor (4), wherein a capillary gap (19) for holding lubricant is provided between the rotor (4) and the stator (12, 13).

39. (amended) The electric motor as claimed in claim [22]38, wherein the alternating currents in individual of said coils have a phase separation which corresponds to an angle of orientation of the individual coils with respect to one another.

43. (amended) The electric motor as claimed in claim 30, wherein a recess[es] (14) and the indentation[s] (8) in the stator and in the rotor (4), respectively, are in a form of truncated cones.